

Application No. 10/007,085  
Reply to Office Action of October 4, 2005

IN THE DRAWINGS

The attached sheets of drawings include changes to Figs. 5, 10, and 16. These sheets, which include Figs. 5, 6, 10, 11, 16, and 17, replace the sheets including Figs. 5, 6, 10, 11, 16, and 17.

Attachment: Replacement Sheets

REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-43 are pending in the present application, Claims 1, 2, 4, 5, 12, 13, 14, 16-18, 20-24, 26, 27, 31-34, 36, and 38-43 having been amended. The amendments to the claims go only to matters of form, and Applicants respectfully submit that no new matter is added.

In the outstanding Office Action Figs. 5, 10, and 16 were objected to; Claims 37-41 were rejected under 35 U.S.C. §101; Claims 23-26, 31, 32, 34-41, and 43 were rejected under 35 U.S.C. §102(b) as anticipated by Cox et al. (EP 0840513, hereinafter Cox)<sup>1</sup>; Claims 30 and 33 are rejected under 35 U.S.C. §103(a) as unpatentable over Cox in view of Sharma et al. (U.S. Patent No. 6,385,329, hereinafter Sharma); Claims 1-22 and 42 were allowed; and Claims 27-29 were objected to for depending from a rejected base claim, but were otherwise indicated as including allowable subject matter.

With respect to the objection to Figs. 5, 10, and 16, new Figs. 5, 10, and 16 are included herewith. Accordingly, Applicants respectfully submit that the objection to the drawings is overcome.

With respect to the rejection of Claims 37-41 under 35 U.S.C. §101, the preambles of Claims 37-41 are amended to recite “a computer program embodied in a computer readable medium.” Accordingly, Applicants respectfully submit that the amendments to Claims 37-41 overcome the rejection based on 35 U.S.C. §101.

In addition, minor informalities in the specification and Abstract are corrected, without the introduction of new matter.

Applicants thank the Examiner for the indication of allowable subject matter.

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<sup>1</sup> Applicants hereby adopt the convention used in the Office Action mailed on October 4, 2005 which cites to columns and lines in the corresponding U.S. Patent No. 5,915,027.

With respect to the rejection of Claim 23 under 35 U.S.C. §102(b) as anticipated by Cox, Applicants respectfully traverse the rejection. Claim 23 recites, *inter alia*, “a correlation processor operable in combination with a data sequence processor to form a correlation sequence... wherein said correlation sequence comprises a plurality of predetermined data sequence versions, each of said versions being provided by shifting the predetermined data sequence used to form said modulated data with respect to others of said versions.” Cox does not describe or suggest at least these elements of Claim 23.

The device disclosed in cols. 5 and 6 of Cox provide for embedding data by modulating a pseudo-random sequence with the data to be embedded and combining the pseudo-random sequence with the image to form a watermarked image. However, the pseudo-random sequence is separated by a watermark segmentor into several sub-watermarks.<sup>2</sup> The data to be watermarked is also processed by a data segmentor 24 which segments the data into blocks or sub-regions.<sup>3</sup> As disclosed in Cox, starting at col. 6, line 24, a single pseudo-random sequence is embedded into an image by embedding each of the sub-watermarks into the data blocks of the image.

As disclosed by Cox at col. 8, line 48, a variation is that the pseudo-random sequence is cyclically rotated by one frequency coefficient prior to insertion into each of the blocks in sequence. Thus, the pseudo-random sequence is shifted cyclically from one block to the next.

At the data extraction, as disclosed starting at col. 9, line 21, the pseudo-random sequence is extracted by comparing each block of the watermarked image with a corresponding block in the original image in order to extract the pseudo-random sequence coefficients in order to extract the watermark. Each pseudo-random sequence extracted from each block is then cyclically shifted in the opposite direction by one coefficient. The shifted recovered pseudo-random sequences are then combined to form a composite sequence which is then correlated with the original pseudo-random sequence in order to detect the data.

Therefore, according to the disclosure of Cox, it is the watermark pseudo-random sequence, recovered from each of the blocks, which is shifted together to form a version of the data is then recovered by correlating with the original version of the pseudo-random sequence.

On the contrary, Claim 23 requires a plurality of predetermined data sequence versions, each of said versions being provided by shifting the predetermined data sequence

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<sup>2</sup> Cox, col. 5, lines 16-

<sup>3</sup> Cox, col. 5, lines 21-23.

used to form the modulated data with respect to others of the versions. In a non-limiting embodiment, a plurality of versions of the pseudo-random data sequence which are shifted to form a correlation sequence which is then correlated with the watermark data sequence recovered from the watermarked image.

Thus, although the disclosure in Cox may appear to address a similar technical problem associated with detecting a watermark and recovering data from a watermarked image, which may have been shifted with respect to the original of the image, the solution provided by Claim 23 differs significantly from the arrangement disclosed in Cox because the original version of the pseudo-random sequence which is correlated with the data recovered from the watermarked image is formed from a plurality of data sequences. Each of the plurality of predetermined data sequences is shifted with respect to the others. A result of the correlation will provide a correct detection of the watermark because the remaining shifted versions will appear as noise.

Thus, in Claim 23 the correlation sequence which is correlated with a recovered version of the watermark data is formed from a plurality of shifted versions of the same pseudo-random sequence. Cox, on the other hand, uses a single pseudo-random sequence to correlate with shifted versions of a watermark data sequence recovered from different blocks of a watermarked image.

In view of the above-noted distinctions, Applicants respectfully submit that Claim 23 (and Claims 24-35 and 38-41) patentably distinguish over Cox. Claims 36 and 43 are similar to Claim 23. Thus, Applicants respectfully submit that Claims 36 and 43 (and Claim 37) patentably distinguish over Cox for at least the reasons stated for Claim 23.

With respect to the rejection of dependent Claims 30 and 33 as unpatentable over Cox in view of Sharma, Applicants respectfully submit that Claims 30 and 33 are patentable for at least the reasons stated for Claim 23, and that Sharma does not cure the above-noted deficiencies in Cox.

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Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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